[The Plane Tree.—*Platanus Orientalis.*]

THE PLANE TREE.

As an English tree there is nothing in the history of the plane which can interest the imagination. No legendary tale has ever hallowed it as an object of veneration or regard, and no memories of old times cling around it. Its name excites no more emotion among the great majority of persons than that of the last horticultural novelty. If we follow to their native homes the two species of plane which are known in England, we shall in one case be led from the shores of Greece and the Levant, through Asia Minor and Persia; and, in the other, to the New World, over an immense tract, comprising the Atlantic and Western States of North America, and the country west of the Mississippi, as far south even as Mexico, and northward as far as Canada. The former species is known as the Oriental Plane (*Platanus Orientalis*), and the latter as the Occidental Plane (*Platanus Occidentalis*). The Oriental Plane was introduced into England about the middle of the sixteenth century. Turner, who published a 'Herbal' between 1541 and 1568, had seen two very young trees, which he considers "were either brought out of Italy, or of some far country beyond Italy, whereunto the friars, monks, and canons went a pilgrimage." The American Plane was introduced into the garden of Mr. John Tradescant at Chelsea about the year 1630; and it is this species which hitherto has been most generally propagated in England, though the late frosts of spring prove highly injurious to it, blighting the young buds, and giving a ragged appearance to the foliage. In its native soil, especially in warm and moist situations on the banks of the Ohio, it is one of the most magnificent trees of the forest. Michaux gives the dimensions of a specimen on an island in the Ohio, which at five feet from the ground measured forty feet four inches in circumference. There are fine trees of both species in the grounds at Lambeth Palace, in the Botanic Garden at Chelsea, and at Mount Grove, Hampstead, varying in height from seventy to ninety feet and upwards; and they are to be seen in many of the squares in London, but these are said to be chiefly the Western species. There are few old plane-trees in England, but one existing at Lee Court, in Kent, was mentioned by Evelyn in 1683. Some of the largest Occidental planes were killed by a severe frost in May, 1809, while the smaller ones were scarcely injured.

The plane may easily be distinguished by the singular appearance of the trunk, the old bark being thrown off in irregular portions, in consequence, as Dr. Lindley states, of its rigidity, by which it is prevented from stretching as the tree increases in diameter. The bark scales off to a less extent in the Oriental Plane than in the other species. They are also distinguished from each other by the form of the leaves, those of the Oriental Plane being the least indented. The seed-vessels, which hang suspended by long threads during

winter, in the form of little balls, are small, and of a rough and spiry texture in the Oriental, and comparatively smooth, and much larger, in the Occidental Plane. Both are of rapid growth, but the latter outstrips its congener. Mr. Loudon states ('Arboretum') that in the climate of London, under favourable circumstances, the Oriental Plane has attained the height of thirty feet in ten years, and in thirty years has arrived at the height of sixty or seventy feet. It is highly probable that the Western Plane, though it grows so rapidly, will cease to be cultivated, now that experience has so completely established its unfitness for our climate.

The wood of the planes is scarcely known in the useful or ornamental arts in this country. In the East it is said to be serviceable to the carpenter and cabinet-maker, being esteemed by the latter for its smoothness and the ease with which it is polished. The timber of old trees resembles the wood of the walnut. Michaux states that the wood of the Western Plane, when properly seasoned, is of a dull red colour, and that it is capable of receiving a finer polish than the beech; but it is fit only for furniture, as it is soon warped by the weather. Mr. Cobbett observes, in his 'Woodlands,' that chopping-blocks in the butchers' shops throughout the United States are almost universally of plane tree, and that they are preferred on account of their chipping less than other wood.

The plane of either species may be regarded simply as an ornamental tree in England, and the Oriental kind may be advantageously planted with this object, either singly, in clumps, or to form an avenue. As a picturesque tree, Gilpin places it after the oak, the ash, the elm, and the hornbeam. Mr. Loudon points out its advantages over other trees, when planted near houses. The large size of the leaves admits the breeze in summer, while at the same time they afford shelter from the sun and rain, and as there exists a proportion between the distance of branches and twigs from each other and the size of leaves, the separation being greater where the leaves are large, the sun's rays are less obstructed in winter by the plane than any other tree. Mr. Loudon enumerates further peculiarities which render it more advantageous than other trees when planted near the house; such as the dull greyish-green of its foliage, which in summer readily harmonises with the colour of stone walls, and in winter the greyish-white tint of the bark, which is then most conspicuous, is not unlike some kinds of freestone. The horizontal direction of the branches admits the lights and shadows to play amidst its foliage with a happy effect. It is not easy to find fault with any tree, and in all we may find something peculiar and worthy of admiration. If, as is generally believed, the plane bears the smoke of towns better than any other tree, it has claims on all who reside afar from the fresh scenes of nature. At the present time there is a plane tree growing in Wood Street, which, catching the eye of the passenger as he hurries along Cheapside, may in an instant carry him away in imagination from the most thronged of the streets of London to the breezy uplands, or some one of the thousands of delightful country nooks which are to be found all over England. One of Wordsworth's beautiful 'Poems of the Imagination,' entitled 'The Reverie of Poor Susan,' is founded on an incident connected with the rush of early feelings excited by the sounds of nature at this very point of the same crowded thoroughfare.

AMERICAN CHEESE.

ALTHOUGH a considerable quantity of American cheese has been imported into England during the last few years, it has scarcely found its way among retail dealers except in a few of our larger towns and cities, principally those having direct intercourse with America. More recently, however, there are exceptions to this, for in some of the market reports of inland towns we find mention made of *American* cheese. Like the Dutch cheese, its quality is inferior to our own best varieties; but there are dairies in America which produce cheese of a better quality than that we are in the habit of importing from Holland.

It is well known that the quality of cheese greatly depends upon the management of the dairy; for in the dairying counties of England, dairy farms lying contiguous to each other, and of precisely the same character, produce cheese of very different degrees of excellence. This is owing to a difference in the economy of the dairy, and we mention it in order to draw attention to the remarkable similarity which exists among the whole of the cheese made in America, not only as regards quality and flavour, but in appearance.

The characteristics of American cheeses consist in their greater diameter or breadth in proportion to their thickness; in their possessing their natural colour, little or no artificial colouring being employed; in their being full of holes or eyes; in possessing a pungent or rather bitter taste, and in a bandage of linen or cotton cloth being passed round their outward rim. In some matters the Americans have adopted modes and customs different from ours and from those of other countries, and by no means superior to those they have rejected or altered. Cheese-making may be considered one of these; and, as a consequence, they produce a quality of cheese decidedly inferior to our own.

The climate of the United States is by no means favourable for the making of either butter or cheese. Extremes of either heat or cold are equally injurious to the milk which is intended for cheese. Winter, however, is not the season for cheese-making either in this country or America, and consequently the milk during the summer months is never exposed to a very low temperature. The economy of the American dairy is a little different from our own, since the whey and the butter-milk from which the cheese and butter have been extracted are of more value in America than in England. This is owing to the greater value of pork in America, in proportion to that of butter and cheese, as the best pork is frequently of higher value, weight for weight, than the best cheese; and in some parts is nearly on a par with the price of butter.

Few of the American dairies make more than one cheese during the day of twenty-four hours: the evening milk is deposited in pans (mostly of tin), and mixed with the morning's milk after the cream has been taken off it, a plan often adopted in some of our own dairies; and such cheeses are called two-meal cheeses; but since the temperature of the atmosphere during the hottest part of summer is at least from 6° to 10° of Fahrenheit higher during both day and night in America, the milk set up over-night gives but a very little cream, and there is less opportunity offered for robbing the cheese of its richest part.

It has been proved satisfactorily that the heat of the milk when the rennet is mixed with it, and it is set to coagulate, should not be over 85° or 87°; that the coagulation should not be too rapidly performed, and that when it has taken place, great attention should be bestowed upon the treatment of the curd. To these points but little attention is paid by the generality of the managers of American dairies: in the first place, the rennet is mixed with the milk while it is too warm, and too much of it is employed in order that the coagulation may be effected as speedily as possible, for during the process of coagulation the temperature of the milk undergoes hardly any perceptible change;

while in our own cheese dairies, in the space of an hour or something more, which the milk is allowed to stand in order to give out all the curd, the temperature commonly sinks 4° or 5°, except in very warm weather, when 80° or 82° is the most approved state at the time the curd is broken down. The American treatment produces a peculiar pungent or bitterish taste; and in general too liberal an allowance of salt is employed, both in the curd and during the time the cheeses are being subjected to the press. Some of the dairy people will tell you that if the cheese were very mild, and but little salted, it would be impossible to keep it from the flies and maggots.

By the too rapid coagulation of the curd, and the complete breaking of it up by the hand, in order that it should quickly subside, the broken curd afterwards becomes hard and tough, and this is the chief cause of the cheese becoming so full of *eyes*. Neither is the management in the press according to the English plan; since where the cheeses are so thin as those usually made in America, less force is necessary to press them sufficiently; for if the curd is put into the cheese-vat saturated with whey, and immediately submitted to a severe pressure, not only is the whey and all other moisture expelled too rapidly, but some portion of the virtue of the finest curd. No doubt cheese ought to be well pressed, but the power should be in proportion to the material, and continued until the desired effect has been produced, by rather slow, but by sure means.

When the cheese has been submitted to the press for the last time, the outward rim or circumference is bound round with a piece of linen or cotton cloth, first rubbed over with paste to make it adhere firmly, the cloth being a little broader than the rim of the cheese, that it should allow of being folded closely over the edges of the rim both above and below. This bandaging is done as a precaution against injury when sent to a distant market, and is rarely adopted except in large dairies; but where the circumference is so great in proportion to the thickness, it is certainly no bad plan to adopt.

The principal districts for cheese, or rather for such as has yet found its way to the English markets, are confined to the states of New York, New Hampshire, Connecticut, and Massachusetts. New York has the reputation of producing some of the best in the United States; but the most noted cheese districts are confined to some of the grass farms bordering on the Hudson, Connecticut, and others of the smaller rivers; but it is with the 'Goshen' cheese of New York, something like what it is with the 'Stilton' cheese in this country, a small quantity only of that which bears the name is produced at or near the place from whence it derives its name.

The usual home price of the best American cheese is about six dollars the 100 lbs., or three pence sterling the pound, and it is retailed at two or three cents more. It is true that various expenses are incurred in the route from the interior of the United States to this country, but surely the cheese which costs three pence per pound within fifty or sixty miles of the city of New York, might be afforded at double that price, or sixpence per pound, in the London market.

Home.—To be happy at home is the ultimate result of all ambition, the end to which every enterprise and labour tends, and of which every desire prompts the prosecution. It is indeed at home that every man must be known by those who would make a just estimate of his virtue or felicity; for smiles and embroidery are alike occasional, and the mind is often dressed for show in painted honour and fictitious benevolence.—*Johnson.*

Love of the Tiger for Human Flesh.—It was my lot to be stationed, for several years, in a remote part of our Indian possessions, adjoining the Mysore frontier, and in the immediate vicinity of the great chain of Western Ghauts. In the pathless thickets of their eternal forests, untrodden by the foot of man, the tigress reared her young, and wandered with her savage partner into the smaller jungles of the plain, proving a scourge that drove every feeling of security from the humble dwellings of the wretched inhabitants. In such a country, inhabited by the poorest classes, living in small villages surrounded by jungle, and forced to seek their subsistence amongst the tiger's haunts, numerous casualties of course occurred, and I had frequent opportunities of studying the habits and witnessing the ravages of this formidable animal. Some idea may be formed of the havoc committed by tigers, when I mention, from returns made to government, that, in one district, three hundred men and five thousand head of cattle were destroyed during three years! Whilst confined in the forest, the tiger is comparatively harmless. There, feeding principally on deer, he rarely encounters man; and when the solitary hunter does meet the grim tyrant of the woods, instinctive fear of the human race makes the striped monster avoid him. But in the open country he becomes dangerous. Pressed by hunger, he seeks his prey in the neighbourhood of villages, and carries off cattle before the herdsmen's eyes. Still he rarely ventures to attack man, unless provoked, or urged to desperation. But under whatever circumstances human blood is once tasted, the spell of fear is for ever broken; the tiger's nature is changed, he deserts the jungle, and haunts the very doors of his victims. Cattle pass unheeded, but their driver is carried off; and from that time the tiger becomes a man-eater.—*Wild Sports of India.*

The Landrail assuming the Semblance of Death.—Mr. Jesse, in his remarks on this bird, says, "I have met with an incident in the natural history of the corn-crake which I believe is perfectly accurate, having been informed that the bird will put on the semblance of death when exposed to danger from which it is unable to escape. The incident was this:—A gentleman had a corn-crake brought to him by his dog, to all appearance quite dead. As it lay on the ground he turned it over with his foot, and was convinced that it was dead. Standing by, however, in silence, he suddenly saw it open an eye. He then took it up; its head fell, its legs hung loose, and it appeared again quite dead. He then put it into his pocket, and before long he felt it all alive, and struggling to escape. He then took it out; it was as lifeless as before. Having laid it again upon the ground, and retired to some distance, the bird in about five minutes warily raised its head, looked round, and decamped at full speed. I have seen a similar circumstance take place with a partridge, and it is well known that many insects will practise the same deception."

Landed Property in Thessaly.—Occasionally we passed a piece of magnificent rye, in full ear at that early season, with straw the longest I ever saw in my life; while the number of wild pigeons that kept constantly rising out of these and other fields of corn, as we rode past them, was positively marvellous. The plain must be marshy in winter; but the whole of it might be easily kept dry enough for cultivation by a few cross-dikes, the parts which are cultivated being drained effectually in that manner. On passing one very magnificent piece of wheat, I observed incidentally to the surrigee that it was in fine condition, and asked if he knew to whom it belonged. "How can I tell?" was his reply; "any one that can afford to watch and guard it may sow wherever he pleases; and when the time of harvest comes he may reap it, if it has not been stolen before that; and then some one perhaps sows there the next year, and the man who has had the crop sows somewhere else." "Then am I to understand that the land belongs to no one, and that any one may plough or sow where he pleases?" said I, somewhat surprised. "How can the land belong to any one?" asked, in reply, the equally astonished Albanian. "If I sow corn there, the corn is mine; if you sow, it is yours; if I see good grass there, I feed my horses, or sheep, or oxen, if I have any; and any other person may do the same; but the land is not mine." "But to whom then does the land belong? May I come and turn out your flocks or sow seeds where you want to sow?" "Of course you may, *if you can;* but if I sow corn there, or feed my flocks there, I take good care to watch it, and not let you."—*Captain Best's Excursions in Albania.*

[Convoy of Diamonds from the Diamond District to Rio Janeiro.]

DIAMOND CARRIERS.

The diamond was formerly obtained only from the East Indies, but the mines in this quarter are now nearly exhausted, and Brazil supplies not only Europe, but, in a great measure, Asia also. They are found in the beds of rivers in the district of Tejuco, which is better known as the 'Diamond District.' At first the search was prosecuted by private adventurers, but the Government finally monopolised the business, and the whole district was placed under peculiar laws and regulations. If diamonds were found in gold washings, the adventurers were obliged to abandon the works to the Government, and very severe measures were adopted to repress the illicit search,—banishment to Africa, or imprisonment for life, with confiscation of property, being the punishment annexed to this offence; but these severe penalties could not repress a traffic which afforded so many facilities for evasion.

When Mr. Mawe, the mineralogist, visited the 'Diamond District,' about two thousand negroes were employed, divided into parties of about two hundred each, under a sub-administrator and overseers. The mode pursued was to turn the channel of the river in whose bed the precious stones were concealed, and, after removing the mud, to dig up the channel and remove the materials, called *cascalho*, for washing. During the dry season, a sufficient supply is taken to occupy the negroes in the rainy months. The *cascalho* is laid in heaps of from five to fifteen tons, and it is now ready for washing, for which purpose water is carried by aqueducts, and means adopted for distributing it in the troughs where the operation is to take place. The method of washing is thus described by Mr. Mawe:—"A shed is erected in the form of a parallelogram, twenty-five or thirty yards long, and about fifteen wide, consisting of upright posts, which support a roof thatched with long grass. Down the middle of the area of this shed a current of water is conveyed through a canal covered with planks, on which the *cascalho* is laid two or three feet thick. On the other side of the area is a flooring of planks, from four to five yards long, embedded in clay, extending the whole length of the shed, and having a slope from the canal of three or four inches to a yard. This flooring is divided into about twenty compartments or troughs, each about three feet wide, by means of planks placed on their edge. The upper end of all these troughs (here called canoes) communicates with the canal, and are so formed that water is admitted into them between two planks that are about an inch separate. Through this opening the current falls about six inches into the trough, and may be directed to any part of it, or stopped at pleasure by means of a small quantity of clay. Along the lower ends of the troughs a small channel is dug to carry off the water." The earthy particles being washed away, the gravel-like matter remains, which is cleared first of the large, and next of the smaller stones, and the residue is then carefully examined. When a negro finds a diamond, he rises up and claps his hands, and one of the overseers receives the gem, all which are found during the day being taken at night to a superior officer, who weighs and registers them. A negro who finds a diamond weighing seventeen and a half carats receives his freedom, and premiums are given to the discoverer of smaller stones. To prevent collusion and concealment of diamonds, the negroes, at a given signal, remove into

different troughs several times in the course of the day.

The diamonds in the treasury of Tejuco are kept in chests, under several locks, the keys of which are entrusted to different officers, and are sent annually under a military escort to Rio Janeiro. The soldiers who perform this duty are selected on account of their good character; and when not thus employed, they are engaged in protecting the places which are known to contain precious products. The journey from Tejuco to Rio Janeiro occupies about a month. The average quantity of diamonds obtained from the Diamond District, when it was visited by Mr. Mawe, was from twenty to twenty-five thousand carats, and the total quantity obtained in Brazil was about thirty thousand carats. Mr. Mawe was shown the diamond treasury at Rio Janeiro, which contained from four to five thousand carats. The largest diamond yet known, which weighs one hundred and thirty-eight and a half carats, was discovered in 1791, in the Rio Abaité, adjoining the district of Tejuco. If estimated by the standard at which smaller diamonds are valued, it would be worth 5,644,800*l.* The following estimates of the commercial value of diamonds of good quality is by Mr. Mawe, who states that the prices are not subject to much fluctuation:—Weight from one to two and a half grains, 7*l.* to 8*l.* per carat; three to four grains, 8*l.* to 9*l.* per carat; five to six grains, 13*l.* to 14*l.* per carat; six grains, perfect, 17*l.* to 18*l.*; weighing two carats, 27*l.* to 30*l.*; three carats, fine and well-formed, 70*l.* to 80*l.*; four carats, 100*l.* to 130*l.*; diamonds weighing five carats are worth from 180*l.* to 200*l.*; and those of six carats, from 230*l.* to 250*l.*

The art of cutting and polishing diamonds was unknown in Europe until 1456, when a young man named Louis Berghen, a native of Bruges, constructed a polishing-wheel and used diamond-powder as an attritive. Besides the value of the diamond for ornament, it is employed in some of the useful arts, and the sale of bad or discoloured diamonds to be pulverised is said to be more extensive than the sale of brilliants. All other precious stones are cut and polished with the diamond; cameos, intaglios, and seals are engraved; and crystal for spectacles, agates for snuff-boxes, and window-glass are cut by it.

IDENTITY OF PERSONS.

It is a most extraordinary phenomenon, that amid the countless myriads of human beings that have been created, a distinctive individual appearance should appertain to each one. The masses of mankind have, by original decree, or the influence of surrounding circumstances, become parcelled out into various nations, each having their peculiar characteristic forms and features; but among none of these (not even the Jews and Gypsies, in whom the practice of intermarriage has contributed to maintain a so remarkable general resemblance) have the marks of the personal identity of the individual been destroyed. Yet there exist some exceptions to this law of identity, and the consideration of some of these may prove not only interesting, but of practical utility.

Although, says Foderé, no two persons do exactly resemble each other, and, on close observation, a distinctive physiognomy may be observed, even in children (and twin children, too) of the same family; yet, the distinguishing traits of some individuals are either so slightly perceptible, or have become forgotten, and thus many persons have been known, without any interested motive, but purely through ignorance, to attest as true what was really false: fathers, mothers, husbands, and wives have been thus led away by illusions—erroneously denying or maintaining the identity of their children, or of each other.

Pliny devotes a section in the seventh book of his 'Natural History' to "Exempla Similitudinum." He says that it was hardly possible to distinguish Pompey the Great from the plebeian Vibius and the freedman Publicius; each of these persons resembling him so closely in his noble and generous deportment and handsome countenance. Cneus Scipio was nicknamed Serapion, from a striking likeness to a low slave of that name who sold animals for the sacrifices: while one of his descendants, and the consuls Lentulus and Metellus, were each called after certain actors whom they so nearly resembled. A fisherman of Sicily resembled the proconsul Sura, not only in features, but also in possessing a peculiar defect of speech. Toranius sold to Antonius, when Triumvir, two children of a rare beauty and a perfect resemblance, although the one was born in Asia, and the other beyond the Alps. He passed them off as twins, but their language afterwards betraying the deception, Antonius reproached the seller with having obtained a far too enormous price for them. Toranius, nothing abashed, replied, that the very point which was considered a defect in these children, was, in truth, their highest recommendation; for while a resemblance between two twins could not be looked on as extraordinary, an example of its existence between two children, born even in different countries, was worthy of the highest recompense. Antonius henceforth considered his purchase as the most valuable of all his articles of *virtù*.

Impostors of various kinds have made the resemblance they bore to other individuals an instrument of practising their deceptions; and some of these have in this way even aspired to the attainment of sovereign power. One of the most remarkable of these is met with in Russian history, under the name of the false Demetrius. The celebrated Czar Basilovitz, dying in 1484, left two sons, the one who became Czar, named Theodore, and the younger named Demetrius. The new Czar, being a very weak man, allowed all the power to pass from his hands into those of his minister Boris, who persuaded him, that for the security of his reign the assassination of his brother Demetrius was necessary; and this was accordingly accomplished. The Czar himself died in a few years, and it was suspected that Boris had poisoned him. With him the line of Ruric, which had governed Russia 700 years, became extinct, and Boris procured himself to be declared Czar.

In 1604 a monk named Ostrefief, who bore a remarkable likeness to the murdered Demetrius, and possessed various qualifications essential to the acquisition of popularity, declared that he really was Demetrius, and that the person who had been assassinated had been substituted for him when he had the good fortune to make his escape. The people, disliking the government of Boris, and attached to the ancient royal race, lent a greedy ear to his representations. Many persons, who had well known the prince from certain marks, declared that this person was really him. He was encouraged by some wealthy nobles, and the king of Poland supplied him with a small army to assert his rights. His progress was notorious, and in 1605 he was crowned at Moscow, Boris having previously in despair taken poison. The widow of Basilovitz, who had been banished, was now sent for by the pretended Demetrius, and with tears in their eyes they recognised each other upon their meeting. The credit of the new Czar now seemed fully established; but his imprudence prevented his reign continuing. Having married a Polish princess, he showed so undue a partiality to the countrymen of his wife, to whom indeed he owed so much, and so great a disposition to encourage the Catholic religion, that a conspiracy was speedily organized against him. The old Czarina was compelled to

recant her avowal of him as her son, declaring she had only pretended to recognise him, as seeing in him an instrument for the chastisement of the oppressors of her race. He was assassinated during the rebellion. No less than *five* other impostors pretended afterwards to be Demetrius; but into their history, or into that of the various wars and tumults they occasioned, we cannot enter, as in no instance, except the first, were the pretensions grounded upon the exactness of the personal resemblance.

Russia has witnessed another impostor in more recent times. A Don Cossack, named Pugatscheff, having been sent to the camp with despatches, was observed by all the officers to bear a remarkable resemblance to the murdered emperor Peter. He resolved to turn this to good account, and having spent some time in Poland in perfecting his scheme, he returned to Russia in 1773, and by spreading the report that he was the emperor, who had escaped from the hands of the assassins, contrived to raise a considerable force among the Cossacks, and for more than a year maintained a most harassing warfare. At last his followers, disgusted with his cruelty and brutality, and stimulated by an immense reward, betrayed him to Count Panin, when he was taken in an iron cage to Moscow, and there executed in 1775.

In France several persons have personated the Dauphin, the son of the unfortunate Louis XVI., who died in prison during the reign of terror, but whom they declared to have escaped. Among these one Hervegault, the son of a tailor, from his strong likeness to Louis XVI., was induced to pass himself off for his son. Persons even of high rank were deceived by him, and induced, in spite of his repeated imprisonments, to pay him royal honours. He died in the Bicêtre in 1812. Some years after, another impostor, named Bruneau, excited considerable attention, and in 1818 was imprisoned for seven years.

The two celebrated instances of impostors which occurred in our own country during the reign of Henry VII., Lambert Simmel and Perkin Warbeck, are not cases in point, as they did not attempt to compass their ends by insisting upon the personal resemblance, but rather by natural address and a skilful employment of historical and family facts, which could only have been acquired from a careful tuition.

Cases of near resemblance are in fact of by no means rare occurrence, and difficult questions of identity are frequently brought before courts of law, some of those which are upon record being of a very interesting nature. Decisions as to heritage and affiliation, nay, affecting life itself, have frequently depended upon the establishment of identity. In that rich repertorium of legal lore, the *Causes Celèbres*, many remarkable cases of disputed identity are to be found: a brief notice of a few of these may prove interesting.

A noted example was determined by the parliament of Toulouse in 1560. Martin Guerre had been absent from home eight years, when an adventurer, named Arnauld Dutille, personated him, and took possession of his property: he had children by Guerre's wife, but neither she nor her sister and brother-in-law suspected the deceit for three years. Some suspicious circumstances then arising, the case was taken before the tribunals, when not less than three hundred witnesses were examined, some of whom positively declared that the accused was Guerre, others as positively that he was Dutille, while a third set declared they could not distinguish the one from the other. The judges were reduced to the greatest perplexity, when the real Guerre appeared. The effrontery of Dutille well nigh disconcerted him, but upon direct personal comparison the wife and sister at once acknowledged him as their relative.

De Caille, a Protestant, fled into Switzerland at the revocation of the Edict of Nantes. His son died in his presence at Vervoi. Some years after, a marine and a Protestant, wishing to obtain the estate by abjuration, declared himself to be the young De Caille, to whom he bore a great resemblance. He was prosecuted as an impostor. Some hundred persons testified as to his identity, among whom were women who had nursed De Caille's child, and old servants of the family. Public enthusiasm became excited in his favour, as it was stated that the opposition to his claims was got up by the Protestants in order to prevent him embracing the Catholic faith. Persons of consequence espoused his cause, and in vain were proofs offered that his true name was Mège, and that the young man whom he personated was really dead. He was put into the full possession of the estate, and shortly afterwards married advantageously. But here he carried matters too far, for he had already a wife, who, having hitherto connived at his proceedings in the hope of sharing in the spoil, finding herself duped and deceived, betrayed his secret. The case was now more carefully reinvestigated at Paris, when it was found that certain physical marks, known to have existed upon the young De Caille, were not to be discovered upon the impostor.

Two children belonging to a widow, named Le Moine, strayed away from home during her absence. About a year after, a mendicant came into the church where the widow was, leading by the hand a little boy. All the inhabitants of the vicinity, struck by its exact resemblance, declared this to be one of the lost children. The mother, however, denied the identity. Her neighbours, among whom was a person who had nursed the child for three years, and the surgeon who had attended it during an illness, protested against her unnatural conduct in denying her child; and the beggar was thrown into prison. The child itself was cunning enough to prefer a life of ease to one of mendicancy, and by its replies only confirmed the existing prejudices. Things so continued, when one day one of the widow's sons returned, and stated that the brother who had run away with him, fell ill and died, and to corroborate what he said, he produced a certificate signed by the minister of the parish and the resident of the house in which the boy had died.

A very singular case occurred in New York in 1804. A man was tried as one John Hoag for bigamy. He denied the identity, and declared his name to be Parker. Numerous witnesses swore that he was really Hoag, and, among others, the woman whom that person had married and deserted. Hoag was, moreover, said to speak quick and lisping, to have a scar on his forehead, and a mark on his neck, all which circumstances were observed regarding the prisoner. Two witnesses, however, distinctly swore that Hoag had a very visible scar upon the sole of the foot, produced by treading on a knife, but this mark did not exist upon the prisoner. He afterwards proved an *alibi*.

One Redman was accused of robbing a Mr. Brown, and one of the witnesses, on cross-examination, said he knew a man, then in custody, who so resembled the prisoner, that he should not know the one from the other. These men were placed side by side in court, and every one was astounded at their exact resemblance.

When the twin brothers Perreau were tried for perjury, their resemblance was so complete, that the scrivener, who had drawn up eight bonds at the order of the one or the other, did not know upon which of them to fix the charge. Dr. Montgomery mentions an instance of twins only to be distinguished by their parents by means of their dress.

The above cases would lead us to conclude that in all criminal trials the greatest caution must be em-

ployed in pronouncing upon cases of doubtful identity, and the melancholy fact that several innocent persons have suffered death through their identity having been mistaken, proves the absolute necessity of such caution.

Dr. Montgomery relates that a gentleman was robbed near Dublin, and a man placed upon his trial as the perpetrator, and convicted upon the prosecutor's testimony; but, owing to prior good conduct, he was recommended to mercy. A few days after, the gentleman was horror-struck at meeting in a road with the very man who had really robbed him. The error in this case seems to have arisen from the defective quantity of light, and the question has been mooted, as to what degree of light is essential to enable a witness to swear to identity. The French Institute decided, after numerous experiments, that the degree of illumination caused by the flashing of a pistol was not sufficient for this purpose. A Bow-street officer, however, identified a robber by this means in 1799; and Dr. Montgomery mentions an instance of a lady obtaining a sufficient view of a robber during a flash of lightning to be enabled to recognise him again.

Two men, named Clinch and Mackay, suffered death in 1797, for the murder of Mr. Fryer, their identity being sworn to by Miss Fryer. Some years after, two thieves, executed for another offence, declared that they were Mr. Fryer's murderers.

Alluding to the case of Colman, who was unjustly executed for rape, Dr. Paris observes:—"The melancholy case of Colman will impress my reader with the importance of carefully noticing the circumstances of *dying declarations*, lest, by receiving as evidence the ravings of delirium, or at least the imperfect impression of impaired faculties, the innocent should be sacrificed to the errors of the dying; and this is the more necessary in those cases wherein the atrocity of the crime committed creates an immediate prejudice against the party charged or suspected."

As on the one hand a person may be condemned through a mistaken identity, so, on the other hand, many circumstances may produce so great an alteration of the personal appearance, that a true identity may be denied. The brethren of Joseph knew him not, and Ulysses was only recognised by his dog. The learned Lacchias relates an instance of this:—Andrew Casali, a Bolognese nobleman, having been absent from his country for thirty years, was supposed to have died in battle, and his heirs took possession of his property. He however, returning at last to Italy, and claiming his rights, was sent to prison as an impostor. Indeed he was so completely changed in appearance, that his recognition was impossible: at this he was in nowise surprised, since, having fallen into the hands of savages, he had sustained several years of cruel bondage. Lacchias, to whom the case was referred, decided that circumstances may so change the appearance as to render it unrecognisable, and Casali was reinstated in all his rights.

Lacchias enumerates the various circumstances which may have an influence in producing this change. The effects of mere age, and of the increase or decrease of corpulency, are known to every one. The change of colour of the eyes, and of the hair, especially of the latter, is remarkable; thus, almost all children are born with blue eyes and light hair. Change of climate seems to have much effect in darkening or rendering grey the hair—the red colour longest resisting its influence, and after it the black. Intense grief may whiten the hair instantaneously, and this is said to have occurred to Marie Antoinette; and Lemnius relates that a criminal, a fine young man, being condemned to death, his hair turned suddenly white. The emperor, when he saw this, thought his hair had been whitened artificially, or that some one had been substituted for the criminal; but on learning the genuineness of the change, he pardoned the man, saying that the dreadful moral convulsion he had undergone was ample punishment. Climate produces many other remarkable changes, as may the various aliments to which the absent person has been accustomed, or the different diseases from which he has suffered. Walter Scott has some lines in 'Marmion,' beautifully illustrative of this part of our subject:

> "Danger, long travel, want and wo,
> Soon change the form that best we know:
> For deadly fear can time outgo,
> And blanch at once the hair.
> Hard toil can roughen form and face,
> And want can quench the eyes' bright grace,
> Nor does old age a wrinkle trace
> More deeply than despair."

It must be allowed, then, that the establishment of identity is frequently a matter of infinite difficulty, and authors have not been able to lay down rules for so doing. Orfila considers that the condition of the hair may frequently aid in proving it; and as no putrefaction occurs in this structure, the mark is available after death. In general the declaration of the identity of dead persons is even far more difficult than is the case with regard to the living, as the features undergo so marked a change. Scars and cicatrices, original or mother-spots, and congenital malformations, form the most unexceptionable marks of identity.

Although the greater number of the narrations concerning supposititious children are the mere offspring of popular credulity and the love of the marvellous, yet in some cases the establishment of the identity of a claimant of an inheritance has been a matter of infinite difficulty. The Anglesey and Douglas cases are celebrated instances of this, that excited a vast degree of interest in the public mind during the periods of their agitation. Lord Mansfield, in delivering the judgment of the House of Lords respecting the latter, laid great stress upon the existence of a family likeness as one proof of identity. He says, "I have always considered likeness as an argument of a child being the son of a parent; and the rather as the distinction between individuals of the human species is more discernible than in other animals: a man may survey ten thousand people before he sees two faces perfectly alike; and in an army of a hundred thousand men, every one may be known from another. If there should be a likeness of feature, there may be a discriminacy of voice, a difference in the gesture, the smile, and various other characters; whereas a family likeness runs generally through all these; for in everything there is a resemblance, as of features, size, attitude, and action." In respect to family likeness, Dr. Gregory used to relate the following anecdote:—Being called to a rich nobleman, residing in one of the provinces of Scotland, he was struck with the exact resemblance the form of his nose bore to that of a portrait of the Grand Chancellor of Scotland in the reign of Charles I In walking through the village next day, he observed the same configuration in several of the inhabitants, and the nobleman's steward informed him that all these persons were illegitimate descendants of the Chancellor.

SPRING BALANCES.

The spring-balance is a machine in which the elasticity of a spring of tempered steel is employed as a means of measuring weight or force. One of the simplest kinds of spring-balance is that which, when employed as a weighing-machine, is known as the spring or pocket steelyard. It consists of a helical

spring formed by bending a steel wire spirally round a cylindrical mandril or axis, so as to form an extensive series of convolutions. This spring is placed in the interior of a tube of brass or iron, closed at both ends; one end of the spring abutting against the plate which closes the lower end of the tube. A rod, having a hook or loop at its lower extremity, to hold the article to be weighed, passes through a hole in the bottom of the tube, and up the inside of the spring. At the upper end of this rod is a small plate, which slides up and down like a piston in the tube, and rests upon the upper or free end of the spring; thereby causing it to collapse when a heavy body is attached to the hook at the bottom of the sliding rod. The machine is supported by means of a hook or ring attached to the upper end of the tube; and the extent of the motion of the spring, and consequently the weight of the body suspended from it, are indicated by the degree to which the rod is drawn out of the tube. For this purpose a graduated scale is engraved upon the rod; the divisions indicating the extent of compression produced in the spring by the application of known weights. Several spring-balances on the same principle are made for various purposes. That known as Salter's balance has a brass plate attached to the tube or cylinder, within which the spring is enclosed, and a vertical slit through the plate and tube. A scale is engraved on the face of the brass plate, and the weight is indicated by a pointer which moves up and down with a spring, with which it is connected through the vertical slit in the tube. A very delicate balance of this kind has been manufactured for weighing letters, since the introduction of Rowland Hill's plan of penny postage. In 1814 the Society of Arts rewarded Mr. Martin for an 'index weighing-machine,' acting upon the same principle, but having a circular dial-plate and a revolving pointer or index resembling the hand of a clock. On the axis of the index, but at the back of the dial-plate, is a toothed pinion, which is turned by a straight rack attached to the vertical rod, which rises and falls with the spring. The index remains in a vertical position when the balance is unloaded, and deviates more or less from it when a weight is attached to the hook. One advantage of this construction is that the point of the index traverses a much greater space than the spring itself, so that a very small movement of the spring becomes readily discernible.

Spring-balances with helical springs are applied to several useful purposes besides that of ascertaining the weight of bodies. A spring of this character is sometimes used to hold down the lever of the safety-valve in a steam-engine boiler, the movement of the index also showing the pressure of the steam. Such an apparatus is especially useful in a locomotive engine, the shaking motion of which might derange a valve loaded with moveable weights. A helical spring-balance forms also a good cable-stopper. When applied to the measurement of muscular force, the tractive power of a locomotive carriage, &c., one end of the cylinder in which the spring is enclosed is made fast to an immoveable object, and the power to be measured is applied to the sliding-rod. If used to ascertain the force necessary to draw a carriage, the spring is placed between the carriage to be drawn and the power employed to draw it. In using a spring-dynamometer for this purpose, especially when the carriage is moved by animal power, some inconvenience is occasioned by the vibration of the index with every trifling variation in the force applied, to remedy which Mr. H. R. Palmer contrived an apparatus in which the quick vibration of the spring is checked by means of a piston moving in a cylinder filled with oil. A very narrow space is allowed for the oil to pass between the edge of the piston and the cylinder, so that a considerable resistance is opposed to the motion of the piston and the springs, and the index consequently represents the mean amount of force applied without being affected by sudden variations.

The ingenious method adopted by Mr. Martin for transmitting the motion of a spring to an index moving upon a circular dial-plate, is applicable to spring-balances of other than the helical construction. It was used by M. Hanin, a French gentleman, who was rewarded by the Society of Arts, in 1790, for an apparatus for showing at one view the weight of an object according to several different scales or systems of weights. His machine, which is described and figured in the ninth volume of the Society's 'Transactions,' consists of a dial-plate, on which are marked several concentric circles, divided according to the systems of weights used in different countries, and an index moved by a rack and pinion, as before described. The spring, instead of being of a helical form, is semicircular; its upper extremity being firmly attached to the back of the dial-plate by means of screws, while its lower end is attached to the hook which carries the weight, and the sliding rack by which the index is moved. Marriott's patent weighing-machine is very similar to that of M. Hanin, but the spring is a perfect ellipsis, with its longer axis laid horizontally. The stem to which the ring for holding the apparatus is attached, is fastened by a nut and screw to the middle of the upper side of the spring; and the rack, with the hook which holds the article to be weighed, to the corresponding point on the lower side of the spring. The spring, rack, and pinion are enclosed in a circular box at the back of the dial-plate, the periphery of which serves as a stop to prevent the spring from being overstrained. A similar apparatus, contrived by M. Regnier, has been used as a dynamometer, as well as a weighing-machine.

A scale-plate or dish may be added when necessary to any of the spring weighing-machines which have been described. On account of the absence of weights, and the great simplicity of their application, spring-balances are very useful in cases where extreme accuracy is not required, especially when a portable weighing-machine is desirable. Machines for ascertaining the weight of the human body are often made on this principle, a kind of chair being suspended from the spring.—*From the Penny Cyclopædia.*

The Steam-Engine.—M. Delecluze nas lately made a discovery among the manuscripts of Leonardo da Vinci, carrying a knowledge of the steam-engine to at least as far back as the fifteenth century. He has published in the 'Artiste' a notice on the life of Leonardo da Vinci, to which he adds a fac-simile of a page from one of his manuscripts, and on which are five sketches with the pen, representing the details of the apparatus of a steam-gun, with an explanatory note upon what he designates under the name of the 'Architonnerre,' and of which note the following is a translation:—"Invention of Archimedes. The Architonnerre is a machine of fine copper, which throws balls with a loud report and great force. It is used in the following manner:—One third of this instrument contains a large quantity of charcoal fire. When the water is well heated, a screw at the top of the vessel which contains the water must be made quite tight. On closing the screw above, all the water will escape below, will descend into the heated portion of the instrument, and be immediately converted into a vapour so abundant and powerful, that it is wonderful to see its fury and hear the noise it produces. This machine will carry a ball a talent in weight." It is worthy of remark, that Leonardo da Vinci, far from claiming the merit of this invention for himself, or the men of his time, attributes it to Archimedes.—*Galignani's Messenger.*